

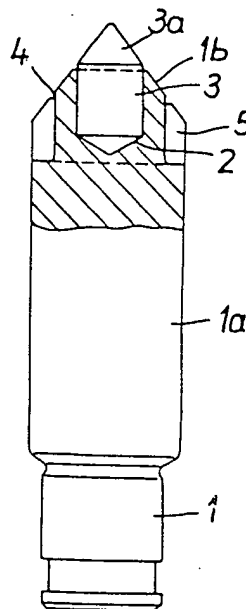
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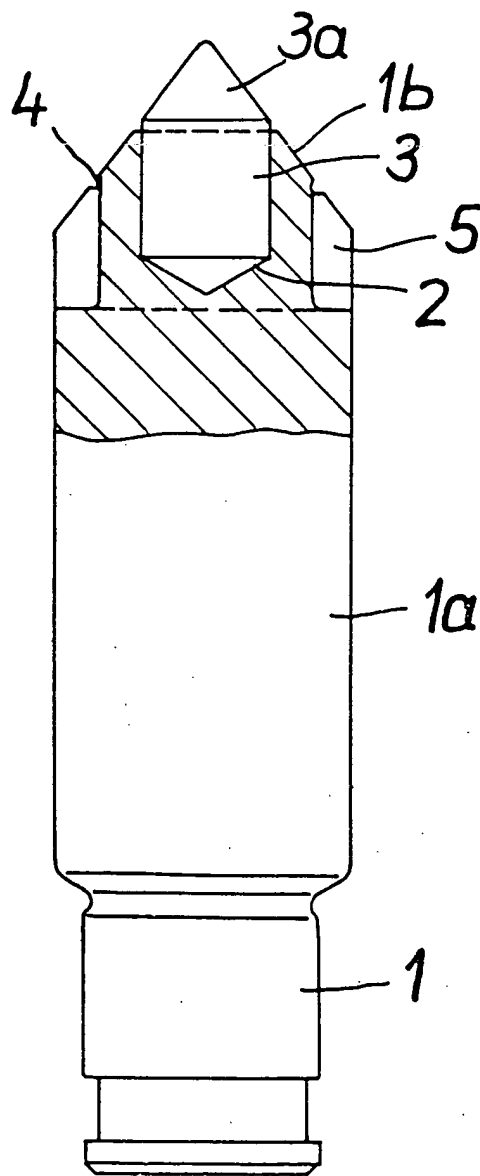
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(54) Tool for cutting rocks and minerals.

(57) A rock cutting tool comprising a steel shaft 1a having an end portion 1b which tapers towards the end of the shaft and contains a hard metal pin 3, the said portion being surrounded by a ring 5 of hard metal.



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SPECIFICATION

Tool for cutting rocks and minerals.

- 5 This invention relates to a tool for cutting rocks and minerals, especially coal, ores, salts and limestone, comprising a steel shaft of circular cross section, which has a cylindrical portion and a portion which tapers towards the tip and a conical tip of hard metal.
- 10 A tool of this kind is described in German Patent Application 2442146 as open to inspection in which the tapered portion of the shaft carries a layer of granular hard metal and in which the hard metal tip constitutes 10-50% of the total area of the circular
- 15 cone formed by the tapered portion of the shaft and the hard metal tip. Wear of this portion of the shaft is delayed by application of the granular hard metal to the tapered portion of the shaft. However, the thickness of the layer of granular hard metal cannot
- 20 exceed about 2 mm. When this relatively thin layer has been worn away during use of the tool, very rapid wear of the tapered portion of the steel shaft occurs and the hard metal pin forming the hard metal tip breaks away from the shaft.
- 25 The object of the invention is to provide a tool for cutting rocks and minerals having an improved life over that of the known tool due to delay in the wear of the tapered portion of the shaft utilising the minimum amount of hard metal.
- 30 This object is achieved in accordance with the invention in that the tapering portion of the steel shaft carries, at the end adjoining the cylindrical portion of the shaft, a hard metal ring. Surprisingly, by application of the hard metal ring to the tapered portion of the shaft an increase in life of 10-40% is
- 35 obtained, depending upon the abrasiveness of the rock. The tool according to the invention has a particularly good resistance to wear when the surface of the circular cone formed by the hard metal tip and the tapering portion of the shaft is composed, in the order stated, of the following portions:-
- 40 a) an outer portion formed by the hard metal tip 10-30%,
 b) a central portion formed by the tapered part of the shaft 80-10%, and
 c) a lower portion formed by the hard metal ring, 10-60%.
- According to a further feature of the invention the hard metal ring is drawn over, shrunk onto or soldered to the tapered portion of the shaft.
- 50 An embodiment of the invention will now be described with reference to the drawing.
- The tool according to the invention comprises a steel shaft 1 of circular section which is fixed to a tool
- 55 holder, not shown. The shaft 1 consists of a cylindrical portion 1a and a portion 1b tapering towards the tip. The tapered portion 1b has a rotationally symmetrical form. At the upper end of the shaft 1 is a central axially extending recess 2, into which the
- 60 hard metal pin 3 is soldered. The tip 3a of the hard metal pin 3 projects from the shaft 1. A recess 4 is formed in the tapered portion 1b of the shaft 1 which receives the hard metal ring 5. The hard metal ring 5 is situated at the end of the tapered portion 1b

the tool shown in the drawing, the surface of the circular cone formed by the hard metal tip 3a and the tapered portion 1b of the shaft consists, in the stated order, of the following portions:-

- 70 a) the upper portion formed by the hard metal tip 3a, 20.3%,
 b) the central portion formed by the tapered shaft portion 1b 36.7%, and
 c) the lower portion formed by the hard metal ring 5 43.0%.
- The hard metal of which the pin 3 and the ring 5 consist may, for example, be of the following composition:-
 WC 85% by weight and Co 15% by weight.

80 CLAIMS

1. A tool for cutting rocks and minerals, especially coal, ores, salts and limestone, comprising a
- 85 steel shaft of circular cross section, which has a cylindrical portion and a portion which tapers towards the tip and a conical tip of hard metal, characterised in that the tapering portion of the steel shaft carries, at the end adjoining the cylindrical portion of the shaft, a hard metal ring.
- 90 2. A tool according to claim 1, characterised in that the surface of the circular cone formed by the hard metal tip and the tapering portion of the shaft is composed, in the order stated, of the following
- 95 portions:- a) an outer portion formed by the hard metal tip 10-30%
 b) a central portion formed by the tapered part of the shaft 80-10%, and
 c) a lower portion formed by the hard metal ring,
- 100 10-60%.
3. A tool according to claims 1 and 2, characterised in that the hard metal ring is drawn over, shrunk onto or soldered to the tapered portion of the shaft.